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IS 13989 (1994): Bulk handling equipment - Bagging machines (mechanical type) - Design and construction - General requirements [MED 7: Material Handling Systems and Equipment]

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Indian Standard

BULK HANDLING EQUIPMENT — BAGGING MACHINES (MECHANICAL TYPE) — DESIGN AND CONSTRUCTION — GENERAL REQUIREMENTS

UDC 621·798·34

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1994 **Price Group 1**

Bulk Handling Systems and Equipment Sectional Committee, HMD 7

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on the recommendations of Bulk Handling Systems and Equipment Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

This Indian Standard covers the general requirements of mechanical type bagging machines. The requirements laid down in the Indian Standard are notwithstanding the requirements of any other Status, Regulations, Acts or Rules or any other Central or State Governments Orders issued from time to time which are to be met otherwise.

Various material handled by the bagging machine are granular and powdery material, grains, cement etc. The accessories and auxiliaries for the bagging systems e.g. bag holder, carousal, off-take conveyor are not covered in this standard.

Mechanical bagging machines are being replaced by electronic type bagging machines where feasible but still a large number of such machines are in use and are expected to be so in future to come. There may be some specific areas where only mechanical, type of bagging machines work satisfactorily. This standard, therefore, attempts to provide uniform guidelines to the purchasers and the suppliers on these machines. This standard covers a net-weigher type bagging machines (mechanical) suitable for filling in open mouthed and/or valve type bags.

The general requirements for design and construction of electronic type bagging machines have been specified in IS 13992 : 1994 'Bulk handling equipment — Bagging machines (electronic type) — Design and construction — General requirements' and data sheet necessary for selection and design of such machines is laid down in IS 13945 : 1994 'Bulk handling equipment — Bagging machines (Electronic type) — Data sheet'.

In the preparation of this standard, assistance has been derived from the following pulications issued by Organization Internationale De Metrologie Lega :

OIML C 8	Non-automatic weighing instruments
OIML R 60	Metrological Regulations for load cell
OIML R 61	Automatic gravimetric filling machines
OIML R 74	Electronic weighing instruments
OIML R 87	Net content in packages

Accuracy requirements have been specified in International Recommendation OIML R 61. Accuracies other than those specified in clause 3.9 may be adopted as per agreement between purchaser and the manufacturer.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off values should be same as that of the specified value in this standard.

Indian Standard

BULK HANDLING EQUIPMENT — BAGGING MACHINES (MECHANICAL TYPE) — DESIGN AND CONSTRUCTION — GENERAL REQUIREMENTS

1 SCOPE

1.1 This standard covers the net-weigher type bagging machines (mechanical) suitable for bulk solid materials.

1.2 The standard also covers details of the functions and the operating characteristics of the bagging machines (mechanical type). Any additional or alternate features may be as agreed to between the purchaser and the supplier.

1.3 This standard generally covers the bagging machines used in conjunction with machines directly mounted on the off-take conveyors. These machines may also be used with carousel type conveyors etc, operational details of which have to be specified by the purchaser.

2 GENERAL REQUIREMENTS

2.1 Design, manufacture and supply of bagging machines shall meet the performance requirements as specified by the purchaser.

2.2 The bagging machines shall be suitable for the duty conditions as specified by the purchaser.

2.3 All parts in contact with material weighed shall be of stainless steel construction.

3 DESIGN AND CONSTRUCTION

3.1 The bagging machine shall be compatible with weighing units and shall be manual, semi-automatic or fully automatic type as specified by the purchaser. The bagging machine shall be suitable for working as net or gross-weighing unit as may be specified by the purchaser. It may also be suitable for working as double net range unit if so specified by the purchaser.

3.2 The bagging machine shall be constructed from heavy duty formed or welded steel and shall be manufactured from steel suitable for the bulk material specified.

3.3 The bagging machine shall be designed so that the flow of the material into the weigh hopper shall be controlled by either gravity feeder, belt feeder, vibrating feeder, rotary feeders or any other feeder to suit the material flow characteristics and as per the requirements given by the purchaser.

3.4 Suitable mechanism shall be provided to vary the feed rates and cut-off the flow of the material automatically as the weigh hopper is filled to target weight. Connection shall be suitable for the volume to be vented for the values furnished by the manufacturer.

3.5 A gate shall be provided at the bottom of the weight hopper which shall open and allow the material to fall into the bag.

3.6 The filling spout with bag clamping device shall be provided to securely hold the bags while the material is being discharged into the bag. The clamp closing and opening shall be controlled by a manual/ switch operated device or as specified by the purchaser.

3.7 Bagging machine housing shall be of dust tight construction with doors as required. The dedusting connections shall be provided at pre-filling spout, weigh hopper etc as the case may be depending on the product handled. The connections shall be suitable for the volume of air to be vented, the value of which shall be indicated by supplier.

3.8 A counting device for counting the number of bags may be provided with the machine as specified by the purchaser.

3.9 The accuracy of the bagging machine shall be ± 0·1 percent per weighment and — 0 percent for any 20 consecutive bags while weighing 50 kg/25 kg bags or as specified by the purchaser as per the relevant clauses of the Weights and Measures (Packaged Commodity) Act.

3.10 The machine shall be capable of being adjusted to weigh in ratio of 1 : 3 without showing any deficiency in its accuracy performance.

3.11 A complete wired local control panel suitable for area classification as per the specification of purchaser shall be provided.

3.12 In case of feeder type machines, feeding of material to be weighed shall be done with variable speeds so as to achieve and maintain the sustained accuracy.

4 OPERATION

4.1 The mode of operation of bagging machine normally is:

- a) Clamping of bag on bagging spout — Manual
- b) Discharge of material in the bag — Automatic
- c) Residue material in the hopper — Manual
- d) Filling cycle of machine — Automatic

4.2 It shall be ensured that no automatic discharge of material takes place unless the bag is clamped.

4.3 Initiating the cycle, for clamping the bag manually, if all the operations of filling right upto discharge of bag are automatic then the operation is termed as semi-automatic.

4.4 The operation of the bagging machine shall be such that the operator while lifting the empty bag for fixing to the filling spout shall simultaneously press with his knuckle the operating lever, after which all the following operations shall be automatic in their proper sequence:

1) Clamping of empty bag on filling spout.
2) Effecting discharge of pre-weighed material to the clamped bag.
3) Closing the discharge gate of weighing receptacle and then starting filling in of fresh charge of material in the weighing receptacle.
4) Release of filled bag.

4.5 Arrangements shall be provided for remote manual release of residue material or material filled in a burst bag.

5 SUPPLY CONDITIONS

Bagging machine shall be supplied complete in all respect along with its discharge chute and pneumatically operated bag holder and all controls including bag spout, internal wiring and control panel, complete drive unit including electric motors, limit switches, required quantity of counter weights, tamper proof counter in six digits with manual resetting provision, anchor bolts, gaskets and other items as may be specified by the purchaser.

6 DRAWINGS AND TECHNICAL DOCUMENTS

The complete technical specification, layout and sectional drawings including functional, operational and control features shall be furnished for the machine.

7 INSPECTION AND TESTING

7.1 The schedule of inspection and testing at manufacturer's works shall be as agreed to between the purchaser and the supplier.

7.2 The bagging machine shall operate satisfactorily without undue noise, vibration or display of any unfavorable characteristics.

7.3 For establishing the sustained capacity and accuracy of the bagging machine, a load test run at site under stabilized conditions for a minimum period of one hour at its rated capacity shall be conducted without any changes in setting of the machine.

8 PROTECTION AND PAINTING

8.1 The bagging machine, its sub-assemblies and other components shall be suitably painted. The machined parts shall be protected against rust with a rust preventive coating.

8.2 Unless otherwise specified by purchaser, all structural parts shall be thoroughly cleaned and painted with at least two coats of paint after a coat of primer.

8.3 The bagging machine shall be properly packed so as to avoid any damage during transportation.

8.4 In case the sub-assemblies or the components have to be packed separately they shall have suitable markings to match them with the related sub-assemblies or the components.

8.5 The bagging machine shall have identification plate showing:

- a) manufacturer's name,
- b) serial number and year of manufacture,
- c) capacity and
- d) any other particular data as specified by purchaser.

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:		Telephone
Central :	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern :	1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern :	SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40 53 23 84
Southern :	C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
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